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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/816,152

03/31/2004

Karl Brown

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04/24/2006

APPLIED MATERIALS, INC.

Patent Department

M/S 2061

P.O. Box 450A

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EXAMINER

DANG, ROBERT TRONG

ART UNIT

PAPER NUMBER

2838

DATE MAILED: 04/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

H.A

<b>Office Action Summary</b>	<b>Application No.</b> 10/816,152	<b>Applicant(s)</b> BROWN ET AL.	
	<b>Examiner</b> Robert T. Dang	<b>Art Unit</b> 2838	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 31 March 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-17 is/are pending in the application.  
     4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10 and 13-17 is/are rejected.
- 7) ☒ Claim(s) 11 and 12 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
     a) ☐ All    b) ☐ Some \* c) ☐ None of:  
         1. ☐ Certified copies of the priority documents have been received.  
         2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
         3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>3/31/2004</u> . | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-4, 6, 8-12, and 14-16 are rejected under 35 U.S.C. 102(b) as being anticipated by Weldon (6108189).

As to claim 1, Weldon discloses in figure 2, electrostatic chuck capable of attachment to a pedestal in a process chamber, the chuck comprising: (a) an electrostatic puck (element 100 - shaped in the form of a puck) comprising a ceramic body with an embedded electrode (110), the ceramic body having a substrate support surface with an annular periphery; and (b) a base plate (105) below the electrostatic puck, the base plate having an annular flange (figure 5a, element 180, see col. 10, lines 59-67 & col. 11, lines 1-23) extending beyond the periphery of the ceramic body, wherein the base plate comprises a composite of a ceramic material (see col. 2, line 11-15) and a metal (see col. 6, lines 63-67 & col. 7, lines 1-13)

As to claim 2, Weldon discloses in figure 5a, wherein the annular flange comprises a plurality of holes to allow connectors to pass there through (figure 5a, element 180, see col. 10, lines 59-67 & col. 11, lines 1-23).

As to claim 3, Weldon discloses in figure 2, wherein the composite comprises a ceramic material having an infiltrated metal (see col. 2, lines 11-34).

As to claim 4, Weldon discloses in figure 9b, wherein the composite comprises silicon carbide infiltrated with aluminum (see col. 14, lines 20-43).

As to claim 6, Weldon discloses in his invention, an electrostatic chuck capable of exhibiting reduced thermal expansion mismatch in a process chamber, (see col. 2, lines 5-10) the chuck comprising: (a) an electrostatic puck comprising a ceramic body with an embedded electrode (element 100 - shaped in the form of a puck), the ceramic body having a substrate support surface and an annular periphery; and (b) a base plate below the electrostatic puck, the base plate having an annular flange extending beyond the annular periphery of the ceramic body (figure 5a, element 180, see col. 10, lines 59-67 & col. 11, lines 1-23), the annular flange comprising a plurality of holes that are shaped and sized to allow connectors to pass therethrough (figure 5a, element 180, see col. 10, lines 59-67 & col. 11, lines 1-23), wherein the base plate comprises a composite comprising a ceramic material infiltrated with a metal; and (c) a support pedestal having a housing and an annular ledge (figure 7, element 336), the annular ledge extending outwardly from the housing, wherein the annular ledge is capable of being attached to the annular flange of the base plate by the connectors (see col. 12, lines 37-60).

As to claim 8, Weldon discloses in figure 2, comprising a heat transfer plate below the base plate (150), the heat transfer plate (105) having a heat transfer fluid channel (90) embedded therein.

As to claims 9-10, Weldon discloses in figure 2, wherein the heat transfer plate (115) comprises an upper portion comprising a first material made of copper and a lower portion comprising a second material made of steel, and the heat transfer fluid

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channel (90) being embedded therebetween (see col. 23, lines 52-67 & col. 24, lines 39-50)

As to claims 14-15, Weldon discloses in figure 2, comprising a thermally conductive layer between the heat transfer plate (150) and base plate (105) (see col. 8, lines 1-14).

As to claim 16, Weldon discloses in figure 2, a substrate processing chamber comprising the electrostatic chuck (100) and further comprising a gas supply (60) to provide a process gas in the chamber (50), a gas energizer to energize the gas, and an exhaust (65) to exhaust the gas (see col. 6, lines 48-62).

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 5 and 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Weldon (6108189) in view of Waggoner et al (6503572).

As to claim 5, Weldon discloses in figure 9b, all of the limitations discussed above, but does not disclose that the volume percentage of aluminum in the composite is from about 20% to about 80%. Waggoner discloses in (col. 15, lines 5-11) his

invention wherein the volume percentage of aluminum in the composite is from about 20% to about 80% in electrostatic chucks (col. 16, lines 34-36). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device and make the silicon carbide with a concentration of 20 to 80 percent aluminum in order to withstand heat better.

Claims 13 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Weldon (6108189) in view of Flanigan et al (6081414).

As to claims 13 and 17, Weldon discloses in figure 2, all of the limitations discussed above, but does not disclose a spring assembly to apply a pressure to the heat transfer plate. Flanigan discloses in figure 2, element 234 (col. 2, lines 52-62) his invention comprising a spring assembly (234) to apply a pressure to the heat transfer plate. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device and utilize springs for applying pressure to the heat transfer plate in order to ensure better heat exchange.

#### ***Allowable Subject Matter***

5. Claims 11-12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: For claims 11-12, the prior art of record does not disclose or suggest in the

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claimed combination: a chuck, wherein the heat transfer plate comprises first and second spiral channels embedded therein, the first spiral channel being adapted to provide a flow of fluid therethrough that is that is substantially opposite a flow of fluid through the second spiral channel. It also does not disclose or suggest the first and second spiral channels encircling a center of the heat transfer plate 3 times.

The art of record does not disclose or suggest the above claimed features, nor would it be obvious to modify the art of record so as to include either of the above limitations.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert T. Dang whose telephone number is 571-272-8326. The examiner can normally be reached on M-F, 9:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Karl D. Easthom can be reached on 571-272-1989. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

RTD

  
**Adolf Deneke Berhane**  
**Primary Examiner**



Heat transfer plate

Electrostatic Chuck

Spring Assembly

1/3 Spiral

Channel

Fluid Inlet

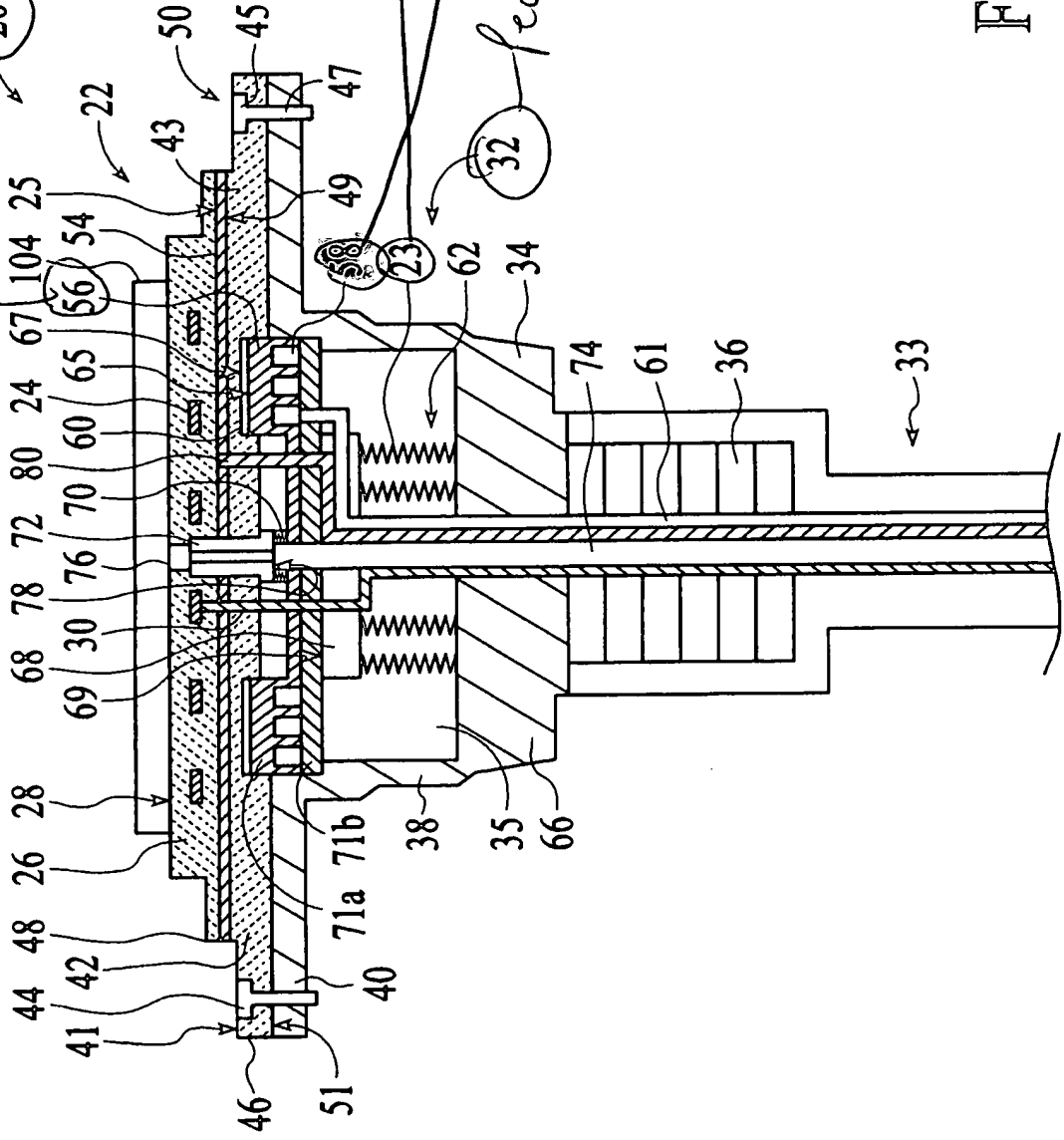


FIG.1

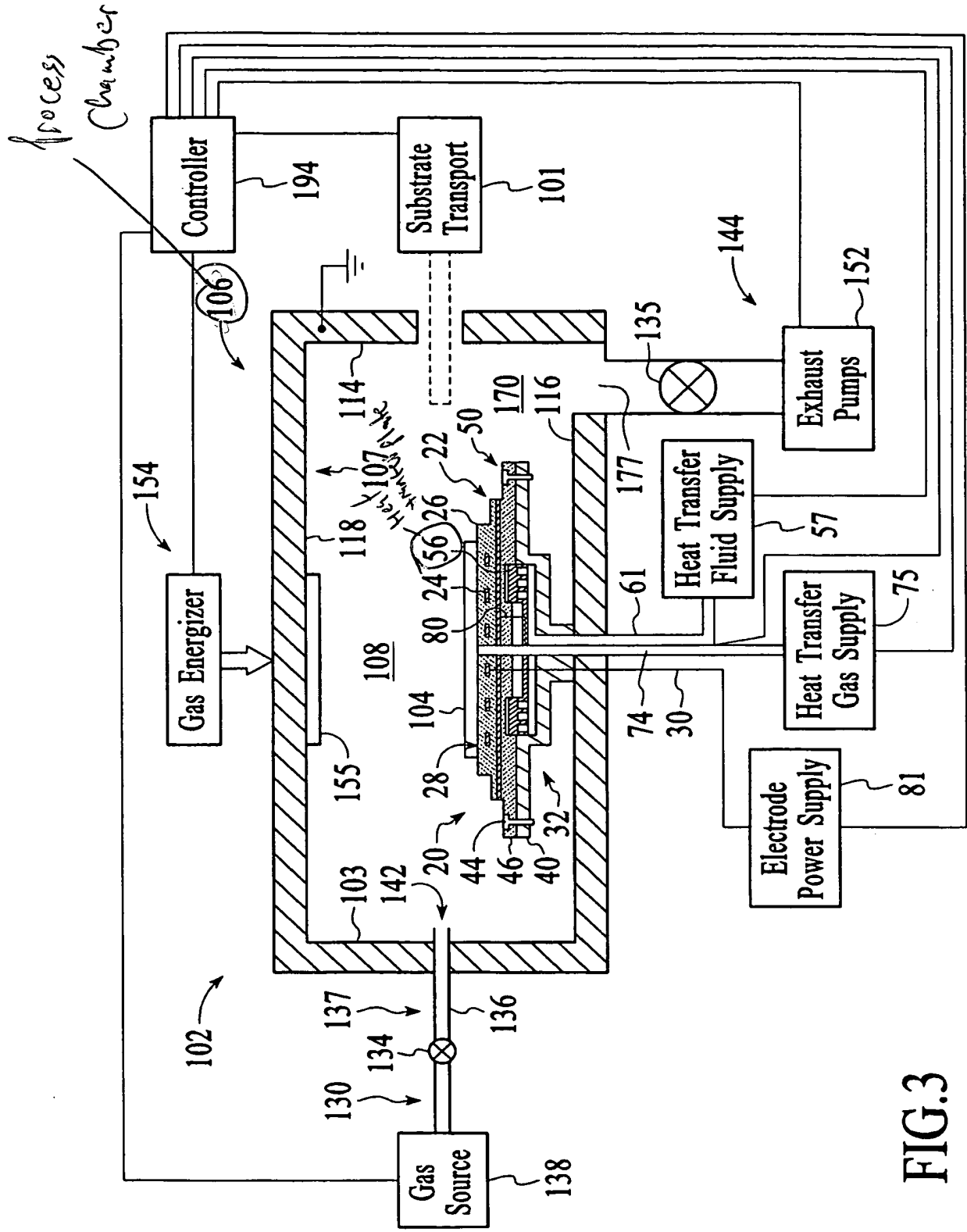


FIG. 3

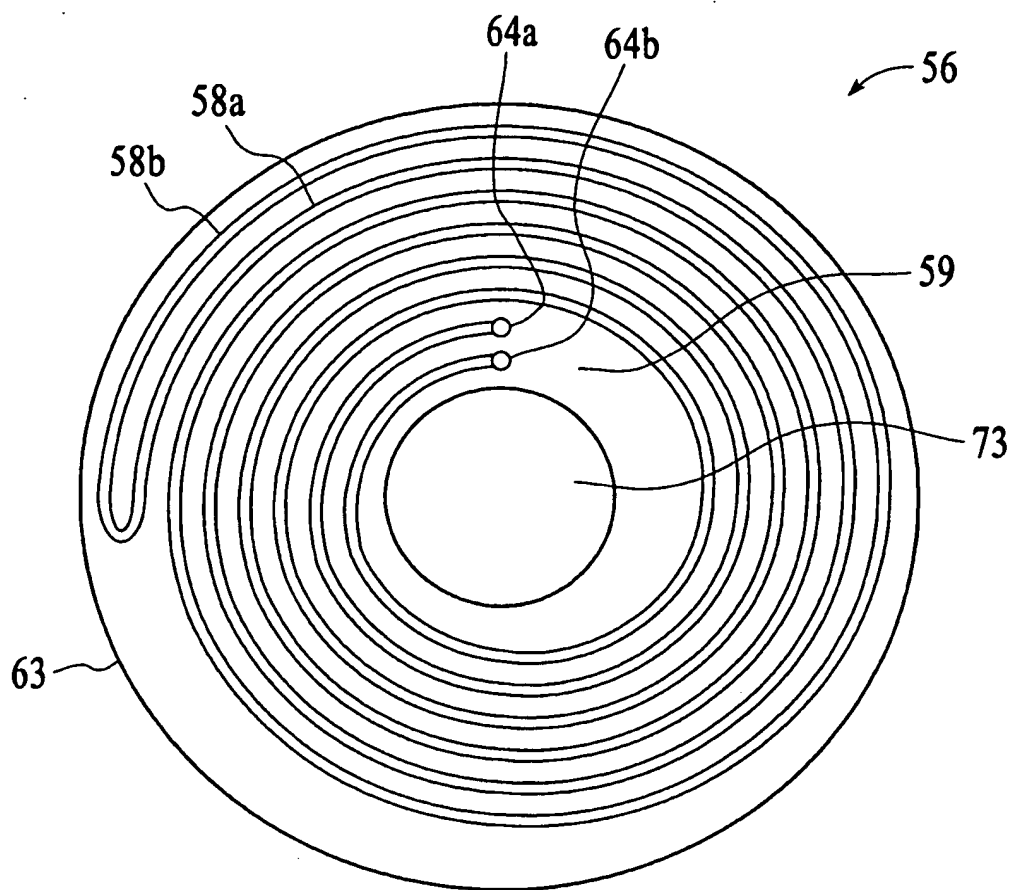


FIG.2